What is claimed is:

1.   A signal recording apparatus, comprising:

quantization means of quantizing a signal employing a quantization step;

quantization information creating means of creating plural pieces of quantization information to specify said quantization step;

encoding means of generating an encoded signal from said quantized signal; and

recording means of recording a compressed signal having data containing said plural pieces of quantization information and said encoded signal.

2.   The signal recording apparatus according to claim 1, wherein said quantization step is a product of a basic quantization step and a multiplier factor to be combined with said basic quantization step, and

 said data is a quantization number for specifying said basic quantization step and the multiplier factor information for specifying said multiplier factor to be combined with said basic quantization step.

3.   The signal recording apparatus according to claim 2, wherein said quantization step is uniform in a macro block comprised of DCT blocks,

 said quantization number is recorded for each said macro block, and

said multiplier factor information is recorded for each said DCT block.

4. The signal recording apparatus according to claim 1, further comprising range conversion means of range converting said quantized signal using a range conversion multiplier factor which is represented as the power of 2,

wherein said data has the information regarding said range conversion multiplier factor.

5. The signal recording apparatus according to claim 4, wherein said quantization step is a product of a basic quantization step and a multiplier factor to be combined with said basic quantization step, and

said plural pieces of quantization information are a quantization number for specifying said basic quantization step and the multiplier factor information for specifying said multiplier factor to be combined with said basic quantization step,

wherein the information involving the range conversion multiplier factor means the overall multiplier factor information consisting of the information regarding the range conversion multiplier factor and the information on the basis of said multiplier factor information.

6. The signal recording apparatus according to claim 5, wherein the multiplier factor to be combined with said basic

quantization step is the power of 2, said multiplier factor
information being the power exponent,

and said overall multiplier factor information is a sum of
its power exponent and the power exponent of the range
conversion multiplier factor represented as the power of 2.

7.   The signal recording apparatus according to claim 6,
wherein said quantization step is uniform in a macro block
comprised of DCT blocks,

said quantization number is recorded for each said macro
block, and

said sum is recorded for each said DCT block.

8.   The signal recording apparatus according to claim 7,
wherein said signal has 12 bits,

said range converted signal has 9 bits, and

said overall multiplier factor information has 2 bits or
less.

9.   A signal recording method, comprising the steps of:

quantizing a signal employing a quantization step;

creating plural pieces of quantization information to
specify said quantization step;

generating an encoded signal from said quantized signal;
and

recording a compressed signal having data containing said
plural pieces of quantization information and said encoded
signal.

10. A signal reproducing apparatus, comprising:

reproduction means of reproducing the data containing plural pieces of quantization information for specifying a quantization step used in quantizing the signal and an encoded signal to be generated from said quantized signal from a compressed signal recorded as a signal having the data and said encoded signal;

quantization step configuration means of configuring a quantization step on the basis of plural pieces of said reproduced quantization information; and

inverse quantization means of making the inverse quantization in accordance with said configured quantization step on the basis of said reproduced encoded signal.

11. The signal reproducing apparatus according to claim 10, wherein said quantized signal is range converted using a range conversion multiplier factor which is represented as the power of 2, and

said data has the information regarding said range conversion multiplier factor,

said signal reproducing apparatus comprising inverse range conversion means of making the inverse range conversion on the basis of said encoded signal and the information regarding said range conversion multiplier factor,

said inverse quantization in accordance with said configured quantization step being effected for said signal

which has undergone the inverse range conversion on the basis of said encoded signal.

12. The signal reproducing apparatus according to claim 11, wherein said quantization step used in quantizing the signal is a product of a basic quantization step and a multiplier factor to be combined with said basic quantization step, and

said plural pieces of quantization information is a quantization number for specifying said basic quantization step and the multiplier factor information for specifying said multiplier factor to be combined with said basic quantization step,

wherein the information involving said range conversion multiplier factor means the overall multiplier factor information consisting of the information regarding its range conversion multiplier factor and the information on the basis of said multiplier factor information.

13. The signal reproducing apparatus according to claim 12, wherein the multiplier factor to be combined with said basic quantization step is the power of 2, said multiplier factor information being the power exponent, and

said overall multiplier factor information is a sum of its power exponent and the power exponent of the range conversion multiplier factor represented as said power of 2.

14. The signal reproducing apparatus according to claim 13, wherein said quantization step used in quantizing said signal is uniform in a macro block composed of DCT blocks,

  said quantization number is recorded for each said macro block, and

   said sum is recorded for each said DCT block.

15. The signal reproducing apparatus according to claim 14, wherein said quantization step configured is a product of a not greater value among the minimum value of the sums recorded for said DCT blocks within said macro block and the maximum value which the multiplier factor information for specifying the multiplier factor to be combined with the basic quantization step can take, and a quantization number recorded for each said macro block.

16. A signal reproducing method, comprising the steps of:

     reproducing the data containing plural pieces of quantization information for specifying a quantization step used in quantizing a signal and an encoded signal to be generated from said quantized signal from a compressed signal recorded as a signal having the data and said encoded signal;

     configuring the quantization step on the basis of plural pieces of said quantization information reproduced; and

     making the inverse quantization in accordance with said configured quantization step on the basis of said reproduced encoded signal.

17. A medium for carrying a program and/or the data for enabling a computer to execute all or some functions provided for means in whole or part of the invention according to any one of claims 1 to 8 and 10 to 15, wherein said medium can be processed by said computer.

18. A medium for carrying a program and/or the data for enabling a computer to execute all or some operations provided for steps in whole or part of the invention according to claim 9 or 16, wherein said medium can be processed by said computer.

19. An information assembly which is a program and/or the data for enabling a computer to execute all or some functions provided for means in whole or part of the invention according to any one of claims 1 to 8 and 10 to 15.

20. An information assembly which is a program and/or the data for enabling a computer to execute all or some operations provided for steps in whole or part of the invention according to claim 9 or 16.